PREVENTIVE MEASURES

QUICK REFERENCE LIST

This quick reference list is meant to alert contractors, project managers and maintenance staff of the minimum requirements for each preventive measure as determined by the Infection Control Risk Assessment (ICRA) CLI.8011.PL.010.SD.01. Contractors, project managers and maintenance staff are responsible to abide by the most current Canadian Standards Association (CSA) Standard CAN/CSA Z317.13.

1.0 Preventive Measure I

1.1 High risk clients, who need to be temporarily moved away from work area or otherwise protected, are identified.
1.2 Client care equipment and supplies are removed or protected.
1.3 Work is scheduled during periods of low user activity.
1.4 New materials are kept clean and dry.
1.5 Methods that minimize the generation and dispersion of dust (i.e., HEPA vacuums for drills) are used.
1.6 Ceiling tile displaced for visual inspection is immediately replaced.
1.7 Water and/or ventilation systems that could be impacted are identified.
1.8 Work areas are HEPA vacuumed and/or wet mopped as necessary throughout project and upon completion.
1.9 Report discoloured water and water leaks to maintenance.
1.10 Plumbing is in accordance with the most current CSA Standard Z317.13.

2.0 Preventive Measure II – All Preventive Measures I shall be implemented in addition to the following:

2.1 Methods are being used that minimize dispersion of dust (i.e., HEPA vacuums or air handling units, poly barriers, drop sheets, portable hoarding units).
2.2 Water mist work surfaces to control dust while cutting.
2.3 Doors and openings are sealed with tape or poly.
2.4 HVAC system supply and return/exhaust air ducts are sealed or isolated.
2.5 Walk-off/sticky mats are at entrance/exit to site and are changed as needed.
2.6 Safe route is in place for transportation of clean/sterile supplies.
2.7 Traffic pattern is established for construction workers that reduces, and if possible, avoids adverse impacts on client care areas.

2.8 Proper debris removal procedures are in place (i.e., after-hours removal, covered carts, carts wiped down before leaving site).

2.9 Vacuum area with HEPA vacuum and wet mop area daily with a hospital-grade low-level disinfectant.

2.10 Water lines in construction are flushed for 10 minutes before client occupancy.

2.11 Terminal clean is performed by housekeeping prior to client occupancy.

3.0 Preventive Measures III and IV – All Preventive Measures I and II shall be implemented in addition to the following:

Before Project Begins

3.1 Multidisciplinary team (MDT) meetings are set up.

3.2 Essential services that could be disrupted are identified.

3.3 Staff in the work area are aware of infection risks and are educated in risk mitigation measures as appropriate to their work activities.

3.4 Infection Control Risk Assessment (ICRA) completed.

3.5 Process in place to ensure that any changes to project scope are reviewed with Regional Infection Prevention & Control Coordinator (Regional IP&C Coordinator) or Infection Control Practitioner (ICP) or MDT.

3.6 Measures in place regarding plumbing system work and potential water disruptions.

- Temperature limits established (CSA Z317.1).
- Disruptions, if needed, are scheduled during times of low user activity.
- Alternative potable water source available, if needed.

3.7 Impermeable dust barrier erected from floor to the true ceiling, consisting of two layers of 6 mil poly and gypsum wallboard protective layer. *

**According to Clause 6.6.1.2, the composition of the barrier may be modified where deemed appropriate by the MDT to suit time, space, or impact constraints. Alternative forms of construction or containment products may be used if they can be shown to provide an equivalent barrier.*

3.8 Anteroom (when required) *

- Large enough to enable materials to move through without having to open both doors at the same time.
- Barrier extends above false ceiling (either entrance or exit wall of the anteroom is extended to the underside of the deck and any openings sealed).
- Entry doors have gasketed frames and closers.
- Negative pressure: at least 2.5 Pa or -0.01 inches of water column in anteroom relative to hospital zone.
- Walk-off sticky mats at entry to anteroom door and inside anteroom.

**Anterooms are required for preventive measure IV work. For preventive measure III/IV projects, the use of an anteroom is at the discretion of the MDT.*

3.9 All seams/penetrations to work area are sealed (doors, plumbing, intake/exhaust vents, electrical outlets, screw heads, etc.), including those above false ceilings.

3.10 Appropriate pressure differential established between work area and occupied areas:

- Minimum 7.5 Pa or -0.03 inches of water column differential maintained.
- Pressure differential monitoring device in place and data logged.
- Device alarmed when deemed necessary by MDT.

3.11 Construction air handling unit(s) (CAHUs):

- Number of units needed to maintain necessary pressure differential for size of space is calculated.
- HEPA filtration – Certification is required prior to start of project or within last 12 months (min.), with documentation.
    - Thorough cleaning (including replacement of pre-filters and secondary filters) is required between projects. Generally, HEPA filters do not need to be replaced between projects.
    - In situations where visible mould is present in the construction area or project involves abatement of asbestos, thorough cleaning (including replacement of HEPA filter) and recertification of the CAHU is required.
- Filters checked and changed as needed, and logged daily.
- Air is exhausted to the outside unless permitted by the MDT.

3.12 Dedicated service elevator (if available), is designated for use.

3.13 The Regional IP&C Coordinator and ICP have taken the CSA Practical Applications in Infection Control During Construction, Renovation and Maintenance in Health Care Facilities Z317.13 course.

3.14 The Regional IP&C Coordinator or ICP to provide infection control education to all contractors, and/or construction workers.

During Project

3.15 Dust barrier integrity is inspected frequently and breaches are immediately repaired.

3.16 Dust suppression is done within work area (water misting work surfaces, HEPA-filtered vacuums, walk-off sticky mats, etc.).

3.17 HEPA vacuuming performed on mechanical and electrical equipment and interior cavities before installation of hard or T-bar ceiling and the closing of walls.

3.18 Procedures, necessary equipment and personal protective equipment in place for construction workers to HEPA vacuum clothes or wear a containment suit prior to leaving construction area and entering client care areas.

3.19 HVAC ductwork protected from dust and moisture (CSA Standard specifies that ductwork must be stored in a clean area and ends sealed until installation).

3.20 Dead leg water pipes in the plumbing system removed at the connection to the main line, where possible.

3.21 Building windows and doors kept closed and intake filters changed more frequently when excavation is taking place. Soil watered down as needed to minimize dust migration.

3.22 Housekeeping to increase frequency of cleaning in areas adjacent to construction area while project is underway.

3.23 Determination of whether air sampling is needed has been made in consultation with the MDT prior to the start of work. If sampling to be done, provision is made for:

- Baseline sampling.
- Periodic or ongoing sampling during the work.
- Procedures to follow if sampling results indicate that a problem exists.

3.24 Members of the MDT conduct routine site visits throughout the project.

End of Project

3.25 If water lines are shut down or accessed during construction, they are flushed before reusing (minimum of 10 minutes). Consideration should be given to disinfecting water systems affected by major plumbing activities (superheating, hyperchlorination, etc.).

3.26 Air filters changed/cleaned as necessary in work areas and ventilation systems functioning properly and cleaned if contaminated during work activities.

3.27 Work spaces and dust barriers within the hoarding are construction cleaned and carefully removed to minimize spreading dirt and debris. Construction clean is defined as a state of cleanliness at the end of the project that allows for effective terminal cleaning of the construction site by the health care facility after hand-over.

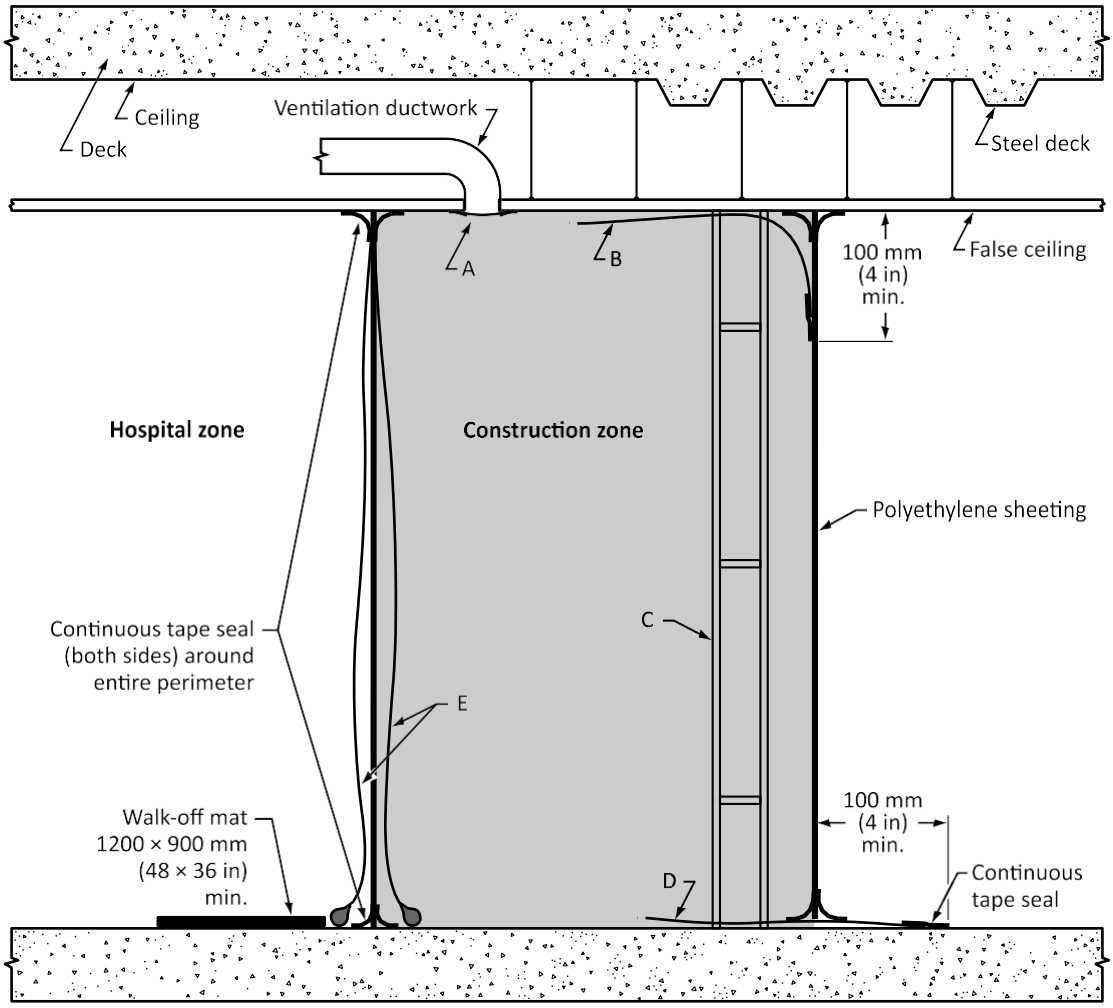
3.28 Housekeeping ensures construction area has been terminally cleaned with a HEPA vacuum, wet mop, or both, and horizontal work surfaces have been wiped with a disinfectant.

3.29 Final inspection of the work area by the Regional IP&C Coordinator or ICP, and terminal clean conditions are achieved before hoarding dismantled and clients readmitted to the area.

3.30 Review is conducted after completion to assess the effectiveness of preventive measures and identify possible improvements.

Examples of barrier configurations

Figure E.1
Preventive Measure II infection control dust barrier, elevation view
(See clause; 7.3.2.2 from referenced document CSA Z317.13-17)



Legend:

A = Windows, doors, shafts, access panels, electrical outlets, intakes, grilles, exhausts, vents, plumbing drains, and all other penetrations in the floor, walls, and ceilings are sealed.

B = Textured, perforated, or drop ceilings are covered with polyethylene to be placed on the inside of vertical sheeting and taped with a continuous seal. Work above the false ceiling requires a barrier extending to the true ceiling.

C = Polyethylene sheeting is reinforced where necessary with framing (metal or wood), zip wall poles, or schedule 40 PVC piping.

D = Carpeted or textured floors have polyethylene sheeting of a minimum 0.30 mm (12 mil) thickness or two 0.15 mm (6 mil) sheets one on top of the other. Vertical sheeting overlaps the horizontal base sheet of polyethylene.

E = Double-flap polyethylene sheeting of a minimum true 0.15mm (6mil) thickness weighted at the bottom. Each door covers the entire cross-section of entrance to work area and opens in both directions.

Figure E.2
Preventive Measure II infection control dust barrier, plan view
(See clause; 7.3.2.2 from referenced document CSA Z317.13-17)

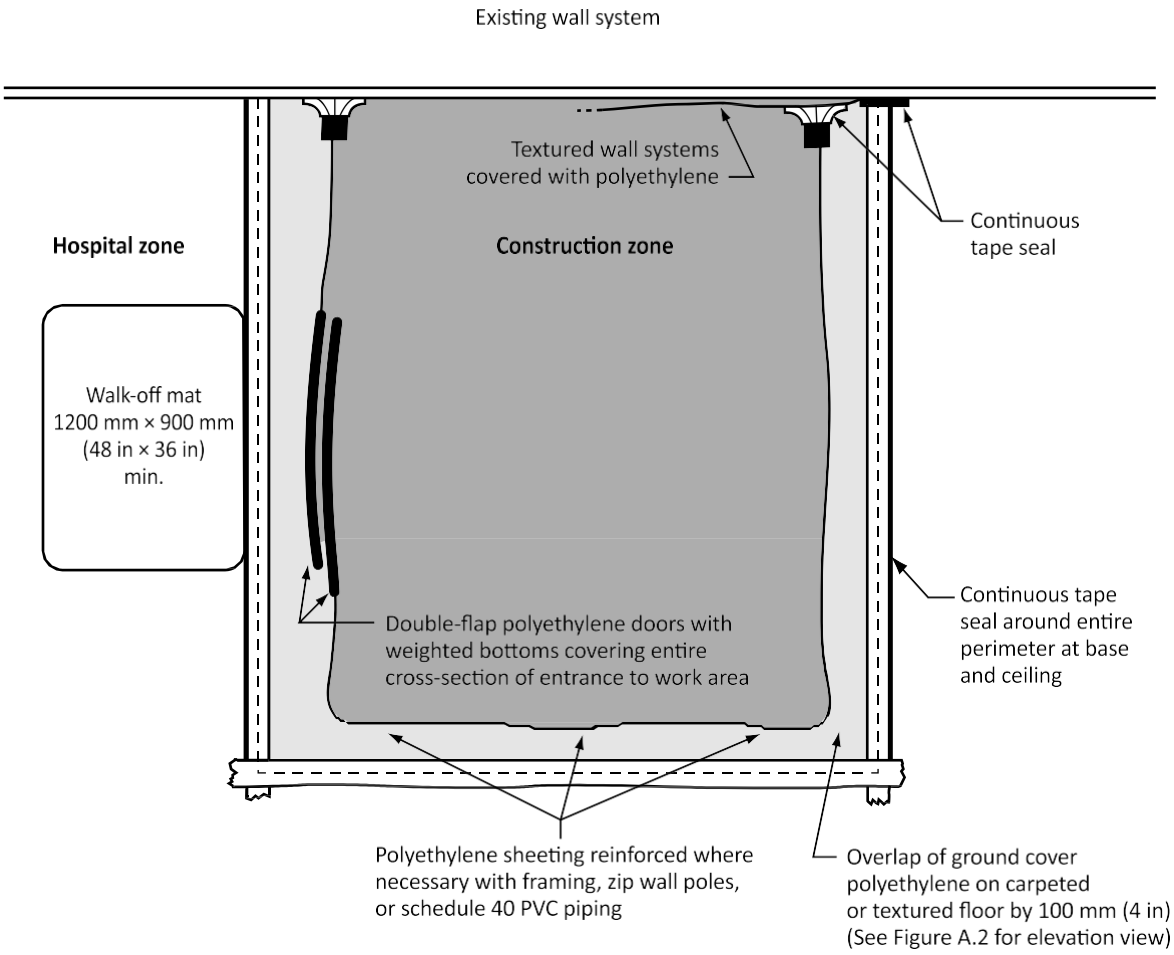
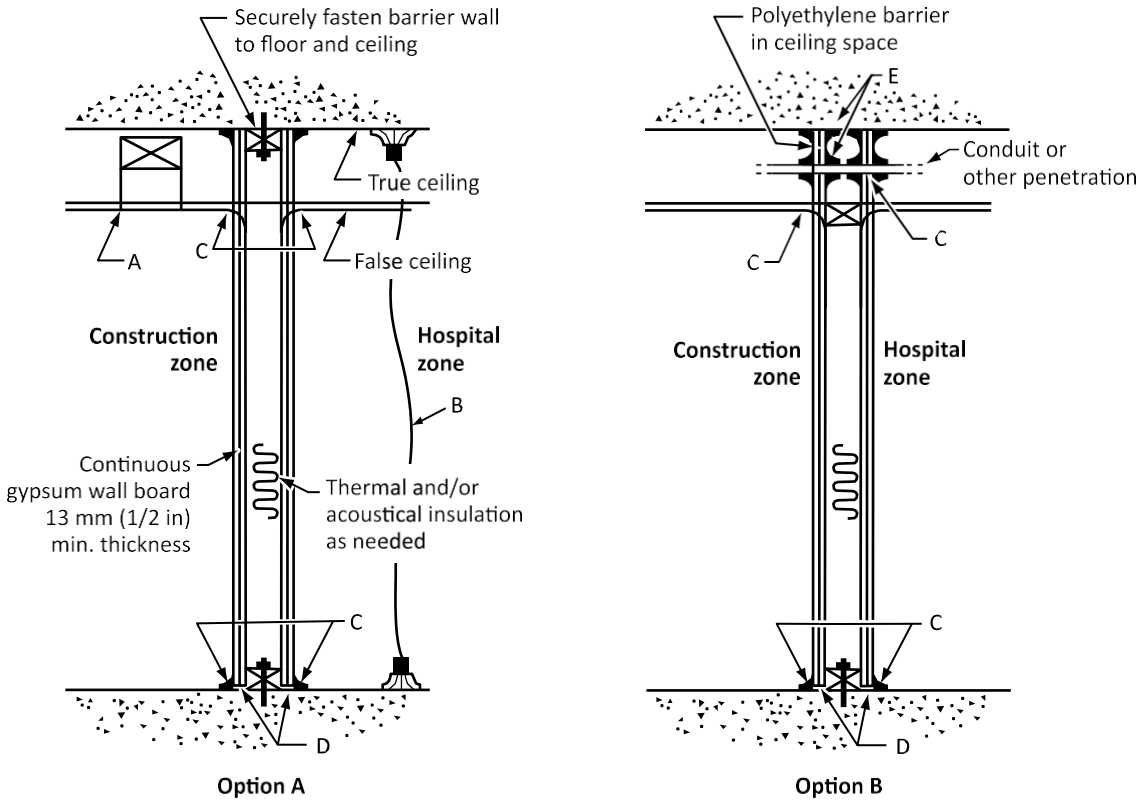


Figure E.3
Preventive Measures III and IV infection control dust barrier wall details, elevation view

(See clauses; 7.3.3 and 7.3.4 from referenced document CSA Z317.13-17)



Legend:

A = Windows, doors, shafts, access panels, electrical outlets, intakes, grilles, exhausts, vents, plumbing drains, and all other penetrations in the floor, walls, and ceilings are sealed.

B = Continuous polyethylene sheeting wall, minimum 0.15 mm (6 mil) thickness, extending from the true ceiling to the floor and around the entire perimeter of the construction zone.

C = Continuous tape seal of gypsum wallboard to floor and ceiling. Entire perimeter is sealed.

D = Continuous tape seal of polyethylene to floor and ceiling. Entire perimeter is sealed.

E = Continuous tape seal of both sides of polyethylene. Entire perimeter is sealed.

Notes:

1) *Option A is preferred. Option B should be used only when penetrations, utilities, or the ceiling structure do not permit extension of a full dust barrier wall.*

2) *A negative pressure of 7.5 Pa (0.03 in wc) is maintained within the construction zone.*

3) *Gypsum wallboard is installed with a gap of no less than 7 mm (1/4 in) between the bottom edge and the floor to prevent wicking of spilled or flooded water.*

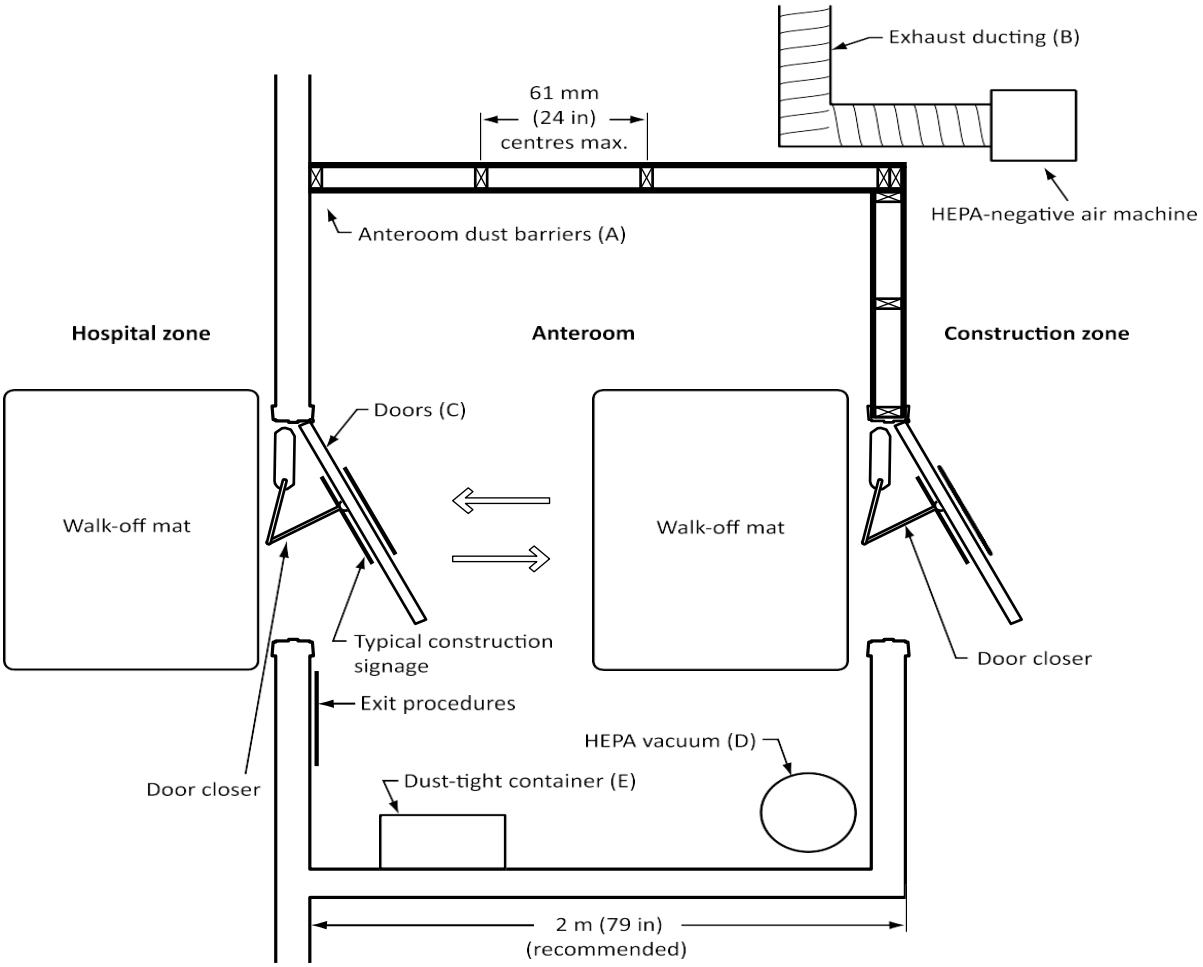
4) *Wall construction comprises 92 mm (3-5/8 in) deep metal studs on 13 mm (1/2 in) gypsum wallboard (both sides).*

5) *Tape can be installed with adhesive spray.*

6) *All materials should be kept dry throughout the project.*

7) *The surface closest to the hospital zone is the wipeable surface.*

Figure E.4
Preventive Measure IV infection control dust barrier anteroom, plan view
(See clauses; 6.6.1.9 and 7.3.4 from referenced document CSA Z317.13-17)



Legend:

A = Anteroom dust barriers extend to the true ceiling or have their roofs constructed in the same manner as Preventive Measure III (see Clause 7.2.3.2). The roof needs to be constructed in a manner that protects against overhead hazards.

B = Exhaust ducting is exhausted to the exterior of the building and directed away from air intakes, occupied areas, or other building openings.

C = Hollow metal lockable doors. Frames and bottom sealed with weather-stripping.

D = Assigned and dedicated HEPA vacuum for personal decontamination and daily or more frequent (if needed) cleaning of anteroom.

E = Dust covers, body suits, and dust masks (for visitors only) hung at wall in a covered dust-tight container.

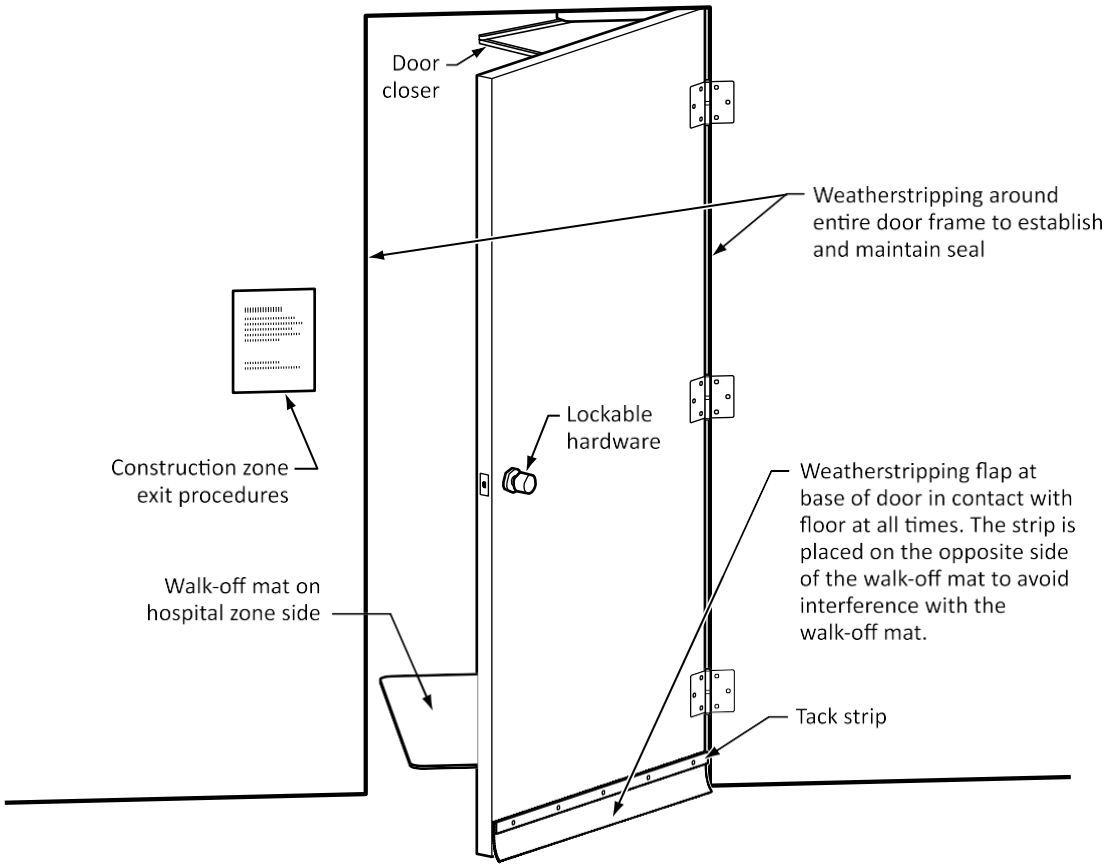
Notes:

1) *Ceiling height should allow space for the manipulation of construction materials coming through the anteroom. A 2.5 m height is recommended.*

2) *The anteroom is the only means of entering and exiting the construction zone. It should be large enough to accommodate the materials that will be moved through it. If both doors must be open to accommodate large items passing through, this should be done under controlled conditions.*

Figure E.5
Preventive Measures III and IV infection control dust barrier door details, elevation view

(See clauses; 7.3.3 and 7.3.4 from referenced document CSA Z317.13-17)



REFERENCES EXTRAPOLATED FROM:

Canadian Standards Association, Infection Control During Construction, Renovation, and Maintenance of Health Care Facilities, CAN/CSA-Z317.13-17